

WHAT IS CLAIMED IS:

1                   1.       A prosthesis for placement at an os opening from a main body lumen  
2 to a branch body lumen; said prosthesis comprising:  
3                   a radially expansible scaffold; and  
4                   at least two circumferential anchors extending axially from an end of the  
5 scaffold, said anchors adapted to extend axially into and expandably circumscribe at least  
6 one-half of the main vessel wall when the scaffold is implanted in the branch lumen with said  
7 one end adjacent the os.

1                   2.       A prosthesis as in claim 1, comprising at least three circumferential  
2 anchors extending axially from the end of the scaffold.

1                   3.       A prosthesis as in claim 1, wherein the anchors have an axial length  
2 which is at least 1.5 times the width of the scaffold prior to radial expansion.

1                   4.       A prosthesis as in claim 1, wherein the anchors have an axial length of  
2 at least 2 mm.

1                   5.       A prosthesis as in claim 1, wherein the scaffold comprises a plurality  
2 of axially adjacent cells.

1                   6.       A prosthesis as in claim 1, wherein the circumferential anchors are all  
2 congruent.

1                   7.       A prosthesis as in claim 1, wherein the circumferential anchors will  
2 radially expand when the scaffold is radially expanded.

1                   8.       A prosthesis as in claim 1, wherein the circumferential anchors are  
2 adapted to both bend and rotate relative to a control axis of the prosthesis.

1                   9.       A prosthesis as in claim 1, further comprising a radiopaque marker at  
2 or near a transition location between the scaffold and the circumferential anchors.

1                   10.      A prosthesis as in claim 1, mounted on a balloon wherein the balloon  
2 has a radiopaque marker aligned with a transition location between the scaffold and the  
3 circumferential anchors.

1                    11.     A method for deploying a prosthesis across an os opening from a main  
2 body lumen to a branch body lumen, said method comprising:  
3                    positioning the prosthesis so that a scaffold lies within the branch body and at  
4 least two circumferential anchors extend into the main body lumen;  
5                    radially expanding the scaffold to implant said scaffold in the branch body  
6 lumen; and  
7                    circumferentially deforming the anchors to circumscribe at least a portion of  
8 the main vessel wall and open a passage through the anchors.

1                    12.     A method as in claim 11, wherein at least three circumferential anchors  
2 extend into the main body lumen.

1                    13.     A method as in claim 11, wherein positioning the prosthesis comprises  
2 aligning a visible marker on at least one of the prosthesis and a delivery balloon with the os.

1                    14.     A method as in claim 11, wherein the lumens are blood vessels.

1                    15.     A method as in claim 11, wherein the scaffold is expanded with a  
2 balloon expanded within the scaffold.

1                    16.     A method as in claim 15, wherein the anchors are deformed by  
2 expanding a balloon positioned transversely through the anchors.

1                    17.     A method as in claim 16, wherein the scaffold and anchors are  
2 expanded and deformed by the same balloon.

1                    18.     A method as in claim 16, wherein the scaffold and anchors are  
2 expanded and deformed by different balloons.

1                    19.     A method as in claim 11, further comprising deploying a second  
2 prosthesis within the passage through the anchors.

1                    20.     A method as in claim 19, wherein the second prosthesis is deployed by  
2 a balloon catheter exchanged over a guidewire pre-positioned for deformation of the anchors.

1                    21.     A method as in claim 19, wherein the anchors are deformed by  
2 deployment of the second prosthesis.

1                    22.     A method as in claim 19, wherein the deployed second stent supports  
2     the anchors over their lengths from the os over the main body lumen wall.